

### REMARKS

Reconsideration of this application, as amended, is respectfully requested.

Claims 13, 17-22 and 27-31 are pending. Claims 13, 17-22, and 27-31 have been objected to.

Claims 13 and 19 have been amended. No claims have been canceled. No claims have been added. Support for the amendments is found in the specification, the drawings, and in the claims as originally filed. Applicants submit that the amendments do not add new matter.

Applicants reserve all rights with respect to the applicability of the Doctrine of Equivalents.

### DOUBLE PATENTING

Claims 1-4, 6-9, 11-14, 16-19, 21-24, 26-29, and 31-34 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-40 of U.S. Patent No. 6,703,685 to Ahmed et al. ("Ahmed") in view of U.S. Patent No. 4, 982,257 to Akbar et al. ("Akbar '257").

Without admitting that the double patenting rejection is proper, applicants submitted a timely filed Terminal Disclaimer in compliance with 37 C.F.R. § 1.321 and payment for the disclaimer fee in the form of a check on June 26, 2007.

The Terminal Disclaimer, as filed by applicants on June 26, 2007, however, has been disapproved as signed by the "attorney not of record".

Applicants respectfully submit that the "Power of Attorney by Assignee and Revocation of Previous Powers" pursuant to 37 C.F.R. §§ 1.36 and 3.71 was filed by Applicants on April 16,

2003 during prosecution of the parent patent application 10/013,075, which was issued as U.S. Patent No. 6,703,685 on March 9, 2004.

Applicants attach herewith a copy of the "Power of Attorney by Assignee and Revocation of Previous Powers", as filed on April 16, 2003 together with a copy of the return postcard with the stamp indicating that the U.S. Patent and Trademark Office received these documents on April 22, 2003.

Therefore, Applicants respectfully submit that the Terminal Disclaimer as filed on June 6, 2007 is in compliance with 37 CFR § 1.321(c) and should be approved. A copy of the Terminal Disclaimer as filed on June 6, 2007, is attached herewith.

Hence, Applicants respectfully submit that the Examiner's non-statutory obviousness-type double patenting rejection of claims 13, 17-22 and 27-31 has been overcome.

#### **REJECTIONS UNDER 35 U.S.C. § 103**

Claims 13, 17-22, and 27-31 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 4,957,875, of Akbar et al. ("Akbar '875"), in view of U.S. Patent No. 5,087,580 of Eklund ("Eklund").

Applicants have amended claim 1 to read as follows:

A bipolar junction transistor comprising:

in a substrate, a first isolation structure spaced apart from a second isolation structure;

an epitaxial base layer formed in the substrate;

an emitter stack disposed immediately above the epitaxial base layer above the substrate and between the first isolation structure and the second isolation structure, wherein the emitter stack has an emitter stack perimeter;

a recess disposed immediately adjacent to the emitter stack and disposed between the emitter stack and the first isolation structure, wherein the recess exposes a collector tap having a collector tap perimeter, wherein the emitter stack and the recess share a boundary, and wherein the emitter stack perimeter and the collector tap perimeter share a co-linear boundary;

an emitter cut provided at the bottom of said emitter stack and immediately on top of an intrinsic base structure formed in epitaxial base layer of the substrate; and

a collector structure disposed in the substrate below the emitter stack, wherein the collector structure is coupled to the collector tap through the substrate.

(Amended claim 1)(emphasis added)

It is respectfully submitted that Akbar does not teach or suggest a combination with Eklund, and Eklund does not teach or suggest a combination with Akbar. It would be impermissible hindsight, based on applicants' own disclosure, to combine Akbar and Eklund. Akbar teaches a vertical bipolar transistor. More specifically, Akbar discloses:

...This transistor comprises a collector layer 12, a base layer 14 disposed over the collector layer 12, and an emitter layer 16 disposed over the base layer 14. ... The configuration further includes a collector contact extension layer 26 formed from heavily doped semiconductor material with the same collector contact extension layer 26 being in contact with the collector layer and extending laterally from or below the one side thereof. It can be seen that this collector contact extension layer 26 in the embodiment shown in FIG. 8 actually contacts the bottom surface of the collector layer 12 and extends laterally to the left of the transistor configuration....

It should be noted that in a preferred embodiment, the collector contact extension layer 26 comprises a first portion 28, which is a subcollector layer, disposed directly below and in contact with the collector layer 12 and having a first dopant concentration, and a second portion 30 with a dopant concentration which is greater than the first dopant concentration and which is disposed directly below the surface 64 of the collector contact extension layer in the volume which extends to one side of the collector layer 12.

(Akbar, col. 3, line 31-col. 4, line 8, Figure 8)(emphasis added)

Thus, Akbar discloses the collector contact extension layer in direct contact with the collector layer. In contrast, amended claim 13 refers to a collector structure disposed in the substrate below the emitter stack, wherein the collector structure is coupled to the collector tap through the substrate.

Eklund, in contrast, discloses a self-aligned bipolar transistor structure (Abstract).

Furthermore, even if the self-aligned bipolar transistor structure of Eklund were incorporated into the vertical bipolar transistor of Akbar, such a combination would still lack

a collector structure disposed in the substrate below the emitter stack, wherein the collector structure is coupled to the collector tap through the substrate, as recited in amended claim 13.

Therefore, applicants respectfully submit that amended claim 13 is not obvious under 35 U.S.C. § 103(a) over Akbar, in view of Eklund.

Given that claims 17-22, and 27-31 depend from amended independent claim 13, and add additional limitations, applicants respectfully submit that claims 17-22, and 27-31 are not obvious under 35 U.S.C. § 103(a).

It is respectfully submitted that in view of the amendments and arguments set forth herein, the applicable rejections and objections have been overcome. If the Examiner believes a telephone conference would expedite or assist in the prosecution of the present application, the Examiner is invited to call Tatiana Rossin at (408) 720-8300.

If there are any additional charges, please charge Deposit Account No. 02-2666.

Respectfully submitted,

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